REMARKS

Pending Claims

Claims 1-22 are pending in this application. All claims stand rejected under 35 U.S.C. § 103 as obvious. Reconsideration of the rejections in view of the remarks herein is requested.

Rejections under 35 U.S.C. § 103

Claims 1 to 22 of the application stand rejected under 35 USC 103(a) as being allegedly unpatentable over US Patent No. 6,181,426 (Bender et al). Applicant has carefully studied the citation and respectfully traverses the Examiner's rejection of the claims and submits that the claims are clearly and patentably distinguished from the citation.

The claims of the subject application define: "An apparatus for measuring decay in intensity of electromagnetic radiation passing through a radiation-absorbent sample due to absorption of radiation by the sample" (See claim 1), and "A method for measuring decay in intensity of electromagnetic radiation-absorbent sample due to absorption by radiation by the sample" (See claim 22). The apparatus and method defined in the claims differs from the system disclosed in the citation in significant respects.

The citation describes a system for monitoring the concentration level of a gas. As described, inter alia, at col. 2, lines 21 to 27, the system comprises an optical system that directs source light along "a plurality of different optical paths having different respective optical path lengths, and a plurality of photodetectors that are positioned to receive the source light that traverses different respective ones of the plurality of different optical paths" (emphasis added).

Thus, light produced by optical source 22 is directed along separate, completely independent optical paths, and the light on each path is detected by a different photodetector. This is best seen by studying the embodiment illustrated in Figure 3 of the citation. In that embodiment, light from source 22 follows four distinct optical paths having optical path lengths X, 2X, 4X and 8X respectively, and the light on each path is detected by a different photodetector referenced 1, 2, 3, 4 respectively. Light propagating on each optical path is received by the associated photodetector via a

respective laterally-spaced aperture 44, 46, 48 and 50 in a detector mask 40, and is not intended to be received by any other photodetector - the optical paths are separate and distinct.

By contrast, apparatus of the subject invention has

> partially-reflective means for partially-reflecting said electromagnetic radiation (from a source) at successive positions which are spaced apart
>
> from each other along a predetermined path through the sample, said partially reflective means being effective at each said successive position to separate incident radiation into a reflected part which is caused by the partially reflective means to follow said predetermined path and an unreflected part.

Similar limitations are required in method claim 22. Claim 1 (emphasis added) Thus, at each successive position along the predetermined path, part of the radiation is reflected and continues along the predetermined path and the unreflected part is used to measure the decay of intensity following detection.

In contrast to the citation, which teaches a plurality of separate optical paths, the subject invention has a common "predetermined path". The predetermined path is facilitated by provision of "partially reflective" means at successive positions along the path which separates incident radiation into a reflected part (which follows the path) and an unreflected part. The system described in the citation has no such "partially reflective" means, nor is such means even contemplated - none is needed because the system uses separate independent paths.

In the embodiment described with reference to Figures 3 and 4, a chopper drum 24 has four circumferentially-spaced and laterally-spaced apertures or windows for enabling sequential detection. The passage at col.5, lines 49 to 62 contemplates a chopper drum 24 having a single aperture or window for enabling simultaneous detection. In this case, light from source 22 reaches each detector via the single aperture in the drum and via the respective, laterally-spaced apertures 44, 46, 48, 50 in detector mask 40. Therefore, again as in the case of the multi-apertured drum, light is directed along separate, independent optical paths and does not involve any partial reflection which is the essence of the subject invention.

As depicted in Figure 3, the apertures (or aperture) 60 are spaced apart from each other laterally (or extends) in the longitudinal axial direction of the rotating drum 24. In view of this, light in each optical path emanates from a different region of the cylindrical optical source 22. Thus, the different optical paths might have a range of slightly different light intensities giving rise to inaccuracy in the measurement of concentration level. Furthermore, each detector may be susceptible to stray light from neighbouring paths and, again, this gives rise to inaccuracy.

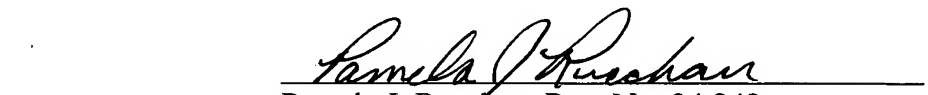
The subject invention is advantageous in that it does not suffer from these deficiencies because radiation follows the same predetermined path, being partially reflected at each successive measurement position along the path.

In view of the foregoing, we respectively submit that claims 1 to 22 are clearly and patentably distinguished from the citation and should now be allowed. The Applicant has also studied US Patent No. 5,222,389 (Wong) and considers that claims 1 to 22 are also clearly and patentably distinguished from this citation.

Conclusion

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,



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Date: February 23, 2004